

CLAIMS

What is claimed is:

1 1. A fluid separator for separating a first, heavier fluid from a second, lighter fluid in
2 a fluid stream, comprising i) an inlet scoop piece with a body having a rib portion
3 defining an enlarged internal channel, a drain tube at a lower end of the rib portion, and a
4 mouth at a forward end of the inlet scoop body; and ii) an outlet scoop piece with a body
5 having a receiving channel at a forward end of the outlet scoop piece dimensioned to
6 closely receive the mouth of the inlet scoop piece; and a lip located internally of the inlet
7 scoop piece and defining a fluid separation cavity with an inner surface of the internal
8 channel, and a flow passage through the inlet scoop piece and the outlet scoop piece,
9 wherein heavier fluid passing through the flow passage separates out in the fluid
10 separation cavity, collects in the internal channel, and drains down through the drain tube.

1 2. The fluid separator as in claim 1, wherein the receiving channel of the outlet
2 scoop piece inwardly and outwardly bounds and supports the mouth of the inlet scoop
3 piece.

1 3. The fluid separator as in claim 2, wherein the mouth of the inlet scoop piece has a
2 radially-outward projecting bead therearound, and the receiving channel of the outlet
3 scoop piece closely receives the outer diameter of the bead, and the lip closely inwardly
4 bounds an inner diameter of the end wall.

1 4. The fluid separator as in claim 3, wherein the mouth of the inlet scoop piece has a
2 flat forward end, and the receiving channel of the outlet scoop piece has a flat end wall,
3 the mouth of the inlet scoop piece being received in the receiving channel such that the
4 forward end of the inlet scoop piece is flush against the end wall of the receiving channel.

1 5. The fluid separator as in claim 1, further including a pair of attachment flanges on
2 the inlet scoop piece and a pair of attachment flanges on the outlet scoop piece, the
3 flanges on the inlet scoop piece being aligned with the flanges on the outlet scoop piece,
4 and fasteners associated with the flanges securing the inlet scoop piece to the outlet scoop
5 piece.

1 6. The fluid separator as in claim 1, wherein the inlet scoop piece and the outlet
2 scoop piece are each unitary components.

1 7. A water separator for removing water from an air stream for an internal
2 combustion engine, said water separator including i) an inlet scoop piece with a body
3 having a rib portion defining an enlarged internal channel, a drain tube at a lower end of
4 the rib portion, and a mouth at a forward end of the inlet scoop body; and ii) an outlet
5 scoop piece with a body having a receiving channel at a forward end of the outlet scoop
6 piece dimensioned to closely receive the mouth of the inlet scoop piece, and a lip
7 projecting outwardly from the forward end of the outlet scoop piece and closely received
8 in the mouth of the inlet scoop piece, the inlet scoop piece and outlet scoop piece being
9 assembled together such that a water separation cavity is defined between the lip and the
10 internal channel, and when the pieces are so assembled, a flow passage defined through
11 the pieces which causes water in the air stream through the flow passage to separate out
12 in the water separation cavity, collect in the internal channel, and drain down through the
13 drain tube.

1 8. The water separator as in claim 7, wherein the receiving channel of the outlet
2 scoop piece inwardly and outwardly bounds and supports the mouth of the inlet scoop
3 piece.

1 9. The water separator as in claim 8, wherein the mouth of the inlet scoop piece, has
2 a radially-outward projecting bead therearound, and the receiving channel of the outlet

scoop piece closely receives the outer diameter of the bead, and the lip closely inwardly bounds an inner diameter of the end wall.

10. The water separator as in claim 9, wherein the mouth of the inlet scoop piece has a flat forward end, and the receiving channel of the outlet scoop piece has a flat end wall, the mouth of the inlet scoop piece being received in the receiving channel such that the forward end of the inlet scoop piece is located flush against the end wall of the channel.

11. The water separator as in claim 7, further including a pair of attachment flanges on the inlet scoop piece and a pair of attachment flanges on the outlet scoop piece, the flanges on the inlet scoop piece being aligned with the flanges on the outlet scoop piece, and fasteners associated with the flanges securing the inlet scoop piece to the outlet scoop piece.

12. The water separator as in claim 7, wherein the inlet scoop piece and the outlet scoop piece are each unitary components.

13. A water separator for removing water from an air stream for an internal combustion engine, said water separator including i) an inlet scoop piece with a body having a rib portion defining an internal enlarged channel, a drain tube at a lower end of the rib portion, and a mouth at a forward end of the inlet scoop piece; and ii) an outlet scoop piece with a body having a receiving channel at a forward end dimensioned to closely receive the mouth of the inlet scoop piece; and an internal lip projecting from the mouth of the inlet scoop piece rearwardly within the inlet scoop piece, the lip and the internal channel in the inlet scoop piece defining a water separation cavity, and when the pieces are so assembled, a flow passage through the pieces which causes water in the air stream to separate out in the water separation cavity, collect in the internal channel, and drain down through the drain tube.

1 14. The water separator as in claim 13, wherein the receiving channel of the outlet
2 scoop piece inwardly and outwardly bounds and supports the mouth of the inlet scoop
3 piece.

1 15. The water separator as in claim 14, further including a pair of attachment flanges
2 on the inlet scoop piece and a pair of attachment flanges on the outlet scoop piece, the
3 flanges on the inlet scoop piece being aligned with the flanges on the outlet scoop piece,
4 and fasteners associated with the flanges securing the inlet scoop piece to the outlet scoop
5 piece.

1 16. The water separator as in claim 12, wherein the inlet scoop piece and the outlet
2 scoop piece are each unitary components.

1 17. A water separator for removing water from an air stream for an internal
2 combustion engine, wherein the engine includes an inlet air scoop and an air cleaner
3 assembly, the water separator including i) an upstream inlet scoop piece unitary with the
4 inlet air scoop and having a body with a rib portion defining an enlarged internal
5 chamber, an elongated drain tube at a lower end of the rib portion, and a mouth at a
6 downstream end of the inlet scoop body; and ii) a downstream outlet scoop piece unitary
7 with the air cleaner assembly, and having a body with a receiving channel at an upstream
8 end dimensioned to closely receive the mouth of the inlet scoop piece; and a lip located
9 internally of the inlet scoop piece and defining a water separation cavity with an inner
10 surface of the internal channel opening in the upstream direction, and a flow passage
11 through the inlet scoop piece and the outlet scoop piece, wherein water in the air stream
12 passing downstream through the flow passage separates out in the water separation
13 cavity, collects in the internal channel, and drains out through the drain tube, and
14 essentially water-free air continues to the air cleaner assembly.